A Troubleshooting Approach

Slow is smooth, and smooth is fast. -- Dale

or

Dude, you're no Sundance Kid.
Don't try shooting from the hip.

• Before
  ○ Documentation:
    ▪ Manuals
    ▪ Take notes: "elog early and often" -- Dale.
    ▪ Install notes
      ▪ Configuration and connections
      ▪ twenty seven eight-by-ten color glossy photographs with circles and arrows and a paragraph on the back of each one explaining what each one was
      ▪ Drawings, picture, diagramming
      ▪ Labeling!
      ▪ Description
      ▪ Vital Statistics
        ▪ Make
        ▪ Model
        ▪ Serial Number
        ▪ Date of Manufacture
        ▪ Vendor
        ▪ Date of Purchase
    ▪ Previous incident reports
  ○ Expected behavior
  ○ Theory of Operation
  ○ Standard Protocols
  ○ Standard Operating Procedures
  ○ History of the Install
    ▪ Date of Install
    ▪ Date of Last Known Working
    ▪ Configuration changes
    ▪ Changes to the larger environment

• During
  ○ Define the problem.
    ▪ Take notes - elog early and often, "even when elog is down". -- Toby
    ▪ How is it suppose to work, what is it suppose to do?
    ▪ What is it doing?
    ▪ What is it not doing?
    ▪ When did it last work correctly?
    ▪ What else is not working?
    ▪ Intermittent or totally broken?
    ▪ Problem metric, reproducibility?
    ▪ When was the problem noticed?
When did the problem start? (not always when noticed)
How does the problem coincide with changes to configuration?
How does the problem coincide with changes to environment?
Error indicators:
  - screaming users
  - blinky lights
  - red not green
  - messages, texts, email
  - beeps
  - klaxons
  - it's quite ... too quite

- Is there spark? Focus
  - Read prior notes
  - Take notes
  - magic smoke
  - blinky lights
  - cables
  - connections
    - not broken
    - corrosion
    - oxidation
  - power
  - bits
    - ping
    - traceroute
    - host
    - route
    - ifconfig / ipconfig

- Isolate the problem, methods of attack
  - Take notes
  - Bottom Up
  - Top Down
  - Divide and Conquer?

- Step through the problem / equipment / data flow
  - Use known working tools and replacements
  - Start from a know working position
  - Step - reproduce the problem
  - Take notes
  - Step - reproduce the problem
  - Repeat as necessary

- Lifelines
  - Support Services
  - Saint Google
  - RVTEC mailing list
  - Your Team
  - Your Friends

- Followup
  - Take notes
  - What was replaced and how was it broken?
  - Do you need to send it out for repair?
- Update the documentation / diagrams.
- After
  - Same as Before